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Experimental Investigation of Palm Oil Biodiesel on a Light-Duty Diesel Vehicle Thermal Efficiency and Particle Emission

Objective

The investigation aims to study the percentage of particle emissions that can be reduced by using palm oil biodiesel compared to conventional diesels.

Result

The result indicates that, despite B100 (palm oil biodiesel) consumes a larger amount of fuel, it exhibits lower brake-specific energy consumption and can achieve a higher 8% brake thermal efficiency compared to diesel fuels. B100 can reduce both particulate number and particulate mass by up to 90% and 60% respectively. B100 also shows a decrease in harmful gas, with a total hydrocarbon emission reduction of 45%. Based on SEM (scanning electron microscopy) images, it might be expected that paper filters of B100 accumulate almost no particulate matter, serving as the evidence of clean fuel. From these observations, B100 produced from palm oil, stands as a promising alternative fuel for reducing particle emissions into the environment without compromising vehicle performance.